125428

[This Drawing is a full-size reproduction of the Original.]

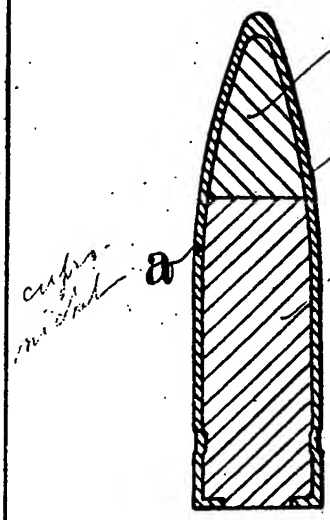

Fig. 1.

Fig. 2.

Fig. 3.

Malby & Sons, Photo-Litho.

125,428

PATENT SPECIFICATION

Application Date, July 17, 1916. No. 10,014/16.
Complete Left, Jan. 16, 1917.
Complete Accepted, Apr. 24, 1919.

PROVISIONAL SPECIFICATION.

Improvements in Projectiles for Small Arms.

We, RICHARD TETLEY GLAZEBROOK, D.Sc., C.B., and WALTER ROSENHAIN, B.A., D.Sc., both of The National Physical Laboratory, Teddington, in the County of Middlesex, do hereby declare the nature of this invention to be as follows:—

This invention relates to projectiles for small arms.

In general it is the present practice to form such projectiles with a cupro-nickel or other envelope having the interior filled mainly with lead but with the nose or forward end portion filled with aluminium for the purpose of ensuring that the centre of gravity of the projectile will be towards the rear or base end thereof.

The object of the present invention is to obviate the necessity for the use of the aluminium tip or nose filling while at the same time existing standards of design and charges may be retained with little or no modification, so that by means of the invention the cost of the process of manufacture will be very materially diminished and a class of labour not hitherto available for the manufacture of such projectiles as constructed hitherto may be with advantage employed for the manufacture of projectiles in accordance with the invention, this being a consideration of great importance when a very large output is a vital necessity.

According to our invention we form our projectiles with any usual or desired envelope, the nose or forward portion of which is filled with pottery, earthenware or other silicates or compounds or mixtures of silicates or other material or materials of a specific gravity sufficiently approximating to that of aluminium so that when used for the forward portion of the filling it shall not materially affect the behaviour of the bullet in use, the rearward portion of the projectile being filled with lead or other usual material.

In carrying our invention into effect when producing an ordinary rifle bullet, for example, we employ a cupro-nickel or other envelope, the forward portion of which is filled with pottery, earthenware or other silicates or compounds or mixtures of silicates or other material or materials which is or may be made of a specific gravity approximately equal or approximating to that of aluminium, the rear portion being filled as is usual with lead and the proportions of lead and earthenware or the like being approximately equal to the proportions of lead and aluminium as used in the ordinary standard rifle bullet so that the position of the centre of gravity of the projectile in accordance with this invention will not differ or will not differ materially from that

[*Price 6d.*]

of the standard projectile, with the result that existing standards of design and charges may be adopted with little or no modification without in any way impairing or interfering with the efficiency and utility of the projectile.

It is to be understood that the invention is not to be confined to any particular material which may be employed in substitution for aluminium provided only that its specific gravity is or may be made sufficiently approximating to that of aluminium, so that it shall not materially affect the behaviour of the bullet in use and provided also that it is of a strength sufficient to resist successfully the forces that act upon it during the filling of the bullet and when the bullet strikes a hard object, so that the filling may not become displaced during firing or afterwards, and we modify the form and design of our projectile and the method of constructing the same to suit the particular filling material that may be adopted or the purpose for which the projectile is to be employed.

Dated this 17th day of July, 1916.

MARKS & CLERK.

COMPLETE SPECIFICATION.

Improvements in Projectiles for Small Arms.

We, RICHARD TETLEY GLAZEBROOK, D.Sc., C.B., and WALTER ROSENHAIN, B.A., D.Sc., both of The National Physical Laboratory, Teddington, in the County of Middlesex, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to projectiles for small arms.

In general it is the present practice to form such projectiles with a cupro-nickel or other envelope having the interior filled mainly with lead but with the nose or forward end portion filled with aluminium for the purpose of ensuring that the centre of gravity of the projectile will be towards the rear or base end thereof.

The object of the present invention is to obviate the necessity for the use of the aluminium tip or nose filling while at the same time existing standards of design and charges may be retained with little or no modification, so that by means of the invention the cost of the process of manufacture will be very materially diminished and a class of labour not hitherto available for the manufacture of such projectiles as constructed hitherto may with advantage be employed for the manufacture of projectiles in accordance with the invention, this being a consideration of great importance when a very large output is a vital necessity.

According to our invention we form our projectiles with any usual or desired envelope, the nose or forward portion of which is filled with pottery, earthenware, cement, glass or other silicates or compounds or mixtures of silicates which is or are or are made of a specific gravity equal to or sufficiently approximating to that of aluminium, so that when used for the forward portion of the filling it shall not materially affect the behaviour of the bullet in use, the rearward portion of the projectile being filled with lead or other usual material.

In the accompanying drawings:—

Figure 1 is a sectional elevation of one form of projectile according to the invention; while

Figures 2 and 3 are an elevation and plan of the pottery or like tip.

In carrying our invention into effect as illustrated and when producing an ordinary rifle bullet, for example, we employ a cupro-nickel or other envelope *a*, the forward portion of which is filled with pottery *b*, earthenware, cement, glass or other silicates or compounds or mixtures of silicates which is or are or are made of a specific gravity approximately equal or approximating to that of aluminium, the rear portion being filled as is usual with lead *c* and the proportions of lead and earthenware or the like being approximately equal to the proportions of lead and aluminium as used in the ordinary standard rifle bullet so that the position of the centre of gravity of the projectile in accordance with this invention will not differ, or will not differ materially, from that of the standard projectile, with the result that existing standards of design and charges may be adopted with little or no modification without in any way impairing or interfering with the efficiency and utility of the projectile.

It is to be understood that the invention is not to be confined to any particular silicate or silicates or mixture or compound of the same which are to be employed in substitution for aluminium provided only that its specific gravity is or is made sufficiently approximating to that of aluminium, so that it shall not materially affect the behaviour of the bullet in use and provided also that it is of a strength sufficient to resist successfully the forces that act upon it during the firing of the bullet and when the bullet strikes a hard object, so that the filling may not become displaced during firing or afterwards, and we may modify the form and design of our projectile and the method of constructing the same to suit the particular filling material that may be adopted or the purpose for which the projectile is to be employed.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A projectile comprising a cupro-nickel or other envelope, the nose or forward portion of which is filled with pottery, earthenware, cement, glass or other silicates or compounds or mixtures of silicates which is or are or are made of a specific gravity equal to or sufficiently approximating to that of aluminium, so that when used for the forward portion of the filling it shall not materially affect the behaviour of the bullet in use, the rearward portion of the projectile being filled with lead or other usual material, substantially as described.

2. An improved projectile substantially as hereinbefore described with reference to the accompanying drawings.

Dated this 16th day of January, 1917.

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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1919.